

DVD+RW

***Video Format Compliance Test
Specification***

Version 1.1

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1 General

1.1 About this document

This document defines the test procedure for manufacturers of **DVD+RW Video recorders** or **DVD+RW Video authoring tools** to prove a minimum level of compliance with the DVD+R/+RW Video Format Specifications.

1.2 Scope

The DVD+RW Video Format Compliance Test belongs to a program to ensure playability of DVD+RW real time video discs on installed base DVD Video players and disc interchange between DVD+RW video recorders. The DVD+R/+RW logo conditions require conformance to the DVD+R/+RW Video Format specifications (see reference [4] and [6] below), and with this compliance test a minimum level of conformance is ensured.

1.3 References and conformance

- [1] DVD Specifications for Read-Only Disc - Part 2: File System Specifications, version 1.01, December 1997.
- [2] DVD Specifications for Read-Only Disc - Part 3: Video Specifications, version 1.1, December 1997, including supplemental information up to January 2001.
- [3] DVD+R 4.7 Gbytes Basic Format Specifications, version 1.3, July 2004, Royal Philips Electronics.
- [4] DVD+R Video Format Specifications, version 2.1, June 2004, Royal Philips Electronics.
- [5] DVD+RW 4.7 Gbytes Basic Format Specifications, volume 1, version 1.3, September 2004, Royal Philips Electronics.
- [6] DVD+RW Video Format Specifications, version 2.1, June 2004, Royal Philips Electronics.
- [7] DVD+R 8.5 Gbytes Basic Format Specifications version 1.0, March 2004, Royal Philips Electronics.

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2 DVD+RW Video Format Compliance Test

2.1 Introduction

The DVD+R and DVD+RW Video specifications were created to allow recording of video content to DVD+R and DVD+RW discs. The recorded discs can be played back on equipment that complies with the DVD Video Read-Only standards (see [1] and [2] in paragraph 1.3). Flawless playback on DVD Video players and disc interchange with other DVD+RW recorders require that the recorded disc is fully compliant with the DVD+R/+RW specifications. This means that the recorded disc shall have all its mechanical parameters, operational signals and data format according to the Physical specifications (see [3], [5] and [7]), while the video format shall comply with the Video Format specifications (see [4] and [6]).

2.2 Purpose of the DVD+RW Video Format Compliance test

The test is intended for manufacturers of **DVD+RW Video recorders** or **DVD+RW Video authoring tools**. It is designed to check a minimum level of compliance¹²³ with the DVD+R/+RW Video specifications version 1 and 2. Although a Physical Format check is not part of the test, discs made with DVD+RW Video recorders shall be within the DVD+R/+RW Physical format specification. If the product has passed the compliance test, it can qualify for listing in the public '*checked products*' database of Philips Intellectual Property and Standards.

2.3 For which products is the qualification intended?

The listing in the "*checked products*" database is intended for "new" products only. A product is considered as *new* if at least one of the following is applicable:

- It is the first product of licensee that has passed qualification.
- There has been a complete replacement of one or more components (firmware, video encoder, etc).
- There has been a major update of the DVD+R/+RW Video specifications (e.g. from v1.x to v2.x).

2.4 Test procedure

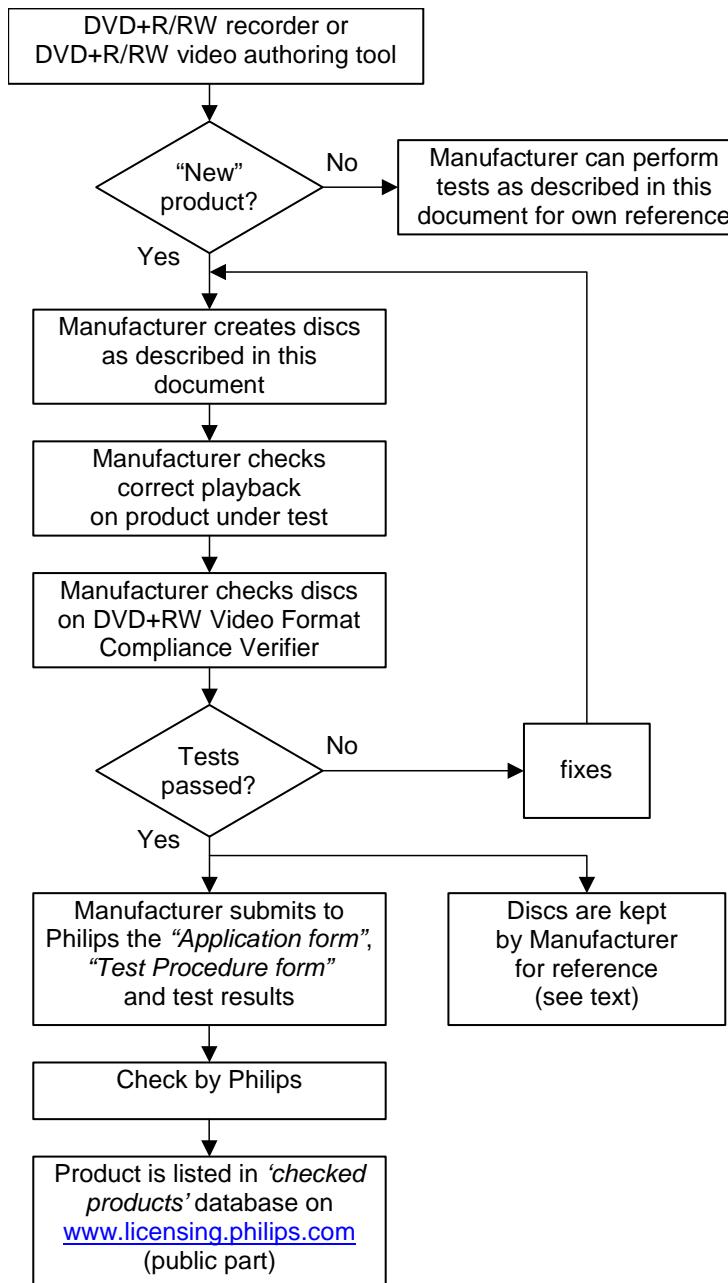
The test consists of the recording of five discs (DVD+R and DVD+RW). The recordings have to be done according to the protocol as described in this document. The recordings cover the basic recording functions, as well as DVD-Video editing, DVD+R/+RW real time video editing (abbreviated as "VR-editing") and importing and recording on "foreign" discs (discs recorded previously with other recorders or applications). The resulting video formats on the discs have a certain complexity. The tests are suitable for 120mm as well as 80mm DVD+R/+RW discs. If a DVD+RW recorder or DVD+RW Video authoring application does not support one or more features that are listed in the test specification, than the feature is skipped in the test (on the test form the feature is marked as "*not supported*"). This does not have any influence on outcome of the compliance test. The idea behind this is the following: a product needs not necessarily support all features, but the features that are supported shall be implemented

¹ The product is not considered as '*according to specification*', if it does not meet this minimum level of compliance to the DVD+R/+RW Video specifications. Both in the relevant license agreements as well as the relevant logo guide, references are made to 'products according to the DVD+R/+RW specifications'.

² If the test result for a product is 'pass', it shall not be considered to guarantee the quality of the product and the compatibility with a specific DVD+R/+RW disc or player/recorder/application.

³ No right, license or privilege can be claimed on the basis of this document or the output of the DVD+RW Video Format Compliance test. The information herein contained as well as details of the test are subject to change.

according to the specifications. After recording, correct playback is checked on at least the product under test and the video format on the discs is checked using the *DVD+RW Video Format Compliance Verifier*. The product manufacturer performs all tests. If the product has passed the test, the test results can be sent to Philips for qualification. The manufacturer shall keep the discs for reference for at least one year or as long as the products are sold (whichever is longest). The test is described in detail in the next paragraphs. The flowchart shows the entire test procedure.



2.5 Tools and discs required for this test

For this test the following tools are required (for ordering information see annex A):

1. **DVD+RW Video Format Compliance Test specification** (this document).

2. **DVD+R/+RW blank discs:** The manufacturer shall use certified DVD+RW and DVD+R discs for this test. A list of certified products can be obtained from the Philips Licensing website. It is recommended to start with blank unrecorded discs.
3. **DVD+RW Video Format Compliance Test Assets Disc:** this disc contains a PAL and a NTSC ISO-image that can be burned to a DVD+RW disc. The disc created in this way is used as input for one of the tests.
4. **DVD+RW Disc burning tool:** to burn image from Assets disc.
5. **PC with DVD+R/+RW drive.**
6. **DVD+RW Video Format Compliance verifier:** this is a PC software tool that can verify the correctness of the DVD+R/+RW Video format on the disc. The application works with any DVD+R/+RW drive.

2.6 Recording of the test discs and filling in the test form

For the DVD+RW Video Format Compliance test, 5 discs shall be recorded according to the table below.

Disc ID	Disc format	Purpose
Disc 1	DVD+RW	Video and audio modes, DVD video editing
Disc 2	DVD+RW	VR-editing
Disc 3	DVD+R	Recording, VR-editing and finalizing a DVD+R
Disc 4	DVD+R	Recording and VR-editing (unfinalized DVD+R)
Disc 5	DVD+RW	Recording on a foreign disc

The test shall be performed as follows:

1. Obtain the latest version of the *DVD+RW Video Format Compliance Test Specification* (this document).
2. Make sure the necessary discs and the latest version of the Verifier tool are available.
3. Perform the tests that are described step-by-step in the *Test Procedure Form* (see annex C).
4. Fill in the *Test Procedure Form* (annex C). As not all products will contain all features that are described in the test procedure, the manufacturer can indicate for each step which feature is available or not.
5. Perform the playback test of the discs, at least on the product under test.
6. Verify the discs using the *DVD+RW Video Format Compliance verifier*. The manufacturer can choose to verify a disc after any step, but for qualification only the verification after the final step has to be submitted to Philips.

2.7 How to submit the test results to Philips

For qualification, the following shall be sent to Philips:

1. The *Application Form* (annex B).
2. The *Test Procedure Form* (annex C)
3. The verification log files (zipped) from the *DVD+RW Video Format Compliance Verifier*

The results shall be sent preferably by email to the email address provided on the *Application Form*, annex B. Please mention in the subject line "*DVD+RW Video Compliance test*", manufacturer name and product model. If you wish to send the results by mail or fax, the address details can also be found in Annex B.

2.8 Disclaimer

A positive test result according to this procedure does not relieve manufacturers from the obligation to comply with any specification items that are not fully covered by the tests. Special attention should be drawn to the following points:

- Menu and navigation – formally compliant data structures as such do not guarantee smooth operation on all DVD players and recorders; extensive testing of discs generated by the recorder on many DVD player models is required.
- Real-time attributes – correct handling of real-time attributes (including copy control information) is not incorporated in the test procedure; this shall be checked by the manufacturer by recording from sources with different attributes in the VBI lines and observing the output of the recorder when playing video with different real-time attributes.
- Playback options – the recorder is not required to support all recording options, but it shall be able to play back the mandatory video and audio formats (as defined by the DVD-Video specifications). In addition to this, correct playback of VR Play Lists as recorded in the VRMI on the disc should be checked.

Manufacturers also have the obligation to ensure that discs made with a DVD+RW Video recorder shall be within the DVD+R/+RW Physical format specification.

2.9 Secrecy Provisions

The Product developer and Philips IP&S shall follow the confidentiality rules:

1. Manufacturer (Licensee) and Philips Intellectual Property & Standards (Philips IP&S) shall comply with the confidentiality obligations for the following information:
 - a. Philips IP&S
 - i. The information about the product from the Licensee.
 - ii. The result of verification performed by the Licensee.
 - b. Manufacturer:
 - i. The verification requirements, tools and procedures.
 - ii. The comments from Philips IP&S on the result of verification performed by the Licensee.
2. The period of confidentiality obligations shall be at least three (3) years after receipt of the other party's confidential information.
3. Manufacturer and Philips IP&S may use the other party's confidential information only for the purpose of evaluating Manufacturers Products' conformance with the relevant specifications and implementing countermeasures.
4. Notwithstanding above, Philips IP&S may disclose the positive result of the evaluation mentioning only the manufacturers name and the product reference of the product tested or may, if such positive result is not available, indicate that no approval is available mentioning only manufacturers name.

Annex A: Ordering information discs and test tools

A.1 DVD+RW Video Format Compliance verifier

This is a PC software tool that can verify the correctness of the DVD+RW Video format on the disc. Details on hardware requirements and ordering information can be found on <http://www.licensing.philips.com/>. Go to 'how to order'. For more information go to 'services'.

A.2 DVD+R/+RW discs for use in this test

The manufacturer shall use certified DVD+RW and DVD+R discs. A list of certified products can be obtained on <http://www.licensing.philips.com/>. Go to 'services'.

A.3 DVD+RW Video Format Compliance Test Assets Disc

This DVD-ROM disc contains PAL and NTSC ISO-images, both in video format version 1 and version 2 (In the VRMI, VERN is set to 0010h or 0020h). The image can be burned to a DVD+RW disc using a PC burning tool. The test disc can be ordered via <http://www.licensing.philips.com/>. Go to 'how to order'. For more information go to 'services'.

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Annex B: Application Form

DVD+RW Video Format Compliance Test

Product Reference:

Product type	<input type="radio"/> Video recorder	<input type="radio"/> Video authoring tool
Manufacturer		
Brand / Model		
Firmware/software revision no.		

The following items have been included:

DVD+RW Video Format Compliance Test Procedure Form

DVD+RW Video Format Verifier test results (log files) of the following discs:

Disc 1
 Disc 2
 Disc 3
 Disc 4
 Disc 5

Company name
Address
Contact person
E-mail
Phone
Fax

 (Authorized signature)

Name: _____

Date: _____

If you send the results by email, please mention in the subject line "DVD+RW Video Compliance test", manufacturer name and product model. Address information:

E-mail address: format.verification@philips.com, **Mail address:** Philips Intellectual Property & Standards, Business Support, Building WAH-2, Prof. Holstlaan 6, 5656 AA Eindhoven, The Netherlands. **Fax number:** +31-40-2732113

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Annex C: Test Procedure Form

DVD+RW Video Format Compliance Test

Product Reference:

Product type	<input type="radio"/> Video recorder	<input type="radio"/> Video authoring tool
Manufacturer		
Brand / Model		
Firmware/software revision no.		

Directions for this test:

1. **Test disc preparation:** in this test, 5 discs are to be prepared. It is recommended to start with blank unrecorded discs.
2. **Blank discs used:** The recordings shall be made on qualified DVD+R and DVD+RW discs. A list of qualified media types can be found in the checked products database at Philips Licensing website. See annex A for more information.
3. **Disc labeling:** It is recommended to label the discs with a recorder identification and the disc number ('disc 1', etc).
4. **Input source material:** For discs 1 to 4, the manufacturer can choose the video and audio source material. For disc 5, the source material is provided on a disc ('DVD+RW Video Format Compliance Test Assets Disc'). See annex A for ordering information.
5. **Supported functions:** at each step, the manufacturer can indicate if the product supports the function or not.
6. **Television system:** For discs 1, 3, 4 and 5 the default television system can be used (PAL or NTSC). For disc 2, the non-default television system shall be used (if supported by the product).
7. **80mm discs:** For 80mm discs the video quality and/or the playing time may be adapted to make the contents fit on the disc.
8. **Playback test:** It is the responsibility of the manufacturer to perform an extensive playback test with each prepared test disc on at least the product under test. Log the results for each disc in the checkbox provided.
9. **DVD+RW Video Format Compliance Verifier:** the discs shall be verified using the verifier. Log the results for each disc in the checkbox provided. See annex A for details on how to order the *DVD+RW Video Format Compliance Verifier*.

Disc 1: Video and audio modes, DVD video editing			
TV system		<input type="radio"/> PAL <input type="radio"/> NTSC (Choose default TV system)	
Disc type		DVD+RW	
Purpose		Test of the correct handling of video and audio formats and the combination of these on one disc; test of the basic recording function, the overwrite-, split- and delete functions and the write-protect function	
Check	Step	Item	Supported by product (Y/N)
<input type="radio"/>	1	Make 3 recordings in the highest video quality level and default audio coding. The recordings shall be 120 seconds* each.	
<input type="radio"/>	2	Add one recording in MPEG1 (SIF) video quality and default audio coding. The recording shall be 480 seconds*. <i>If MPEG1 (SIF) is not supported, the recording shall be made in the lowest MPEG2 video quality level.</i>	
<input type="radio"/>	3	Make one recording in the lowest MPEG2 half D1 video quality level and default audio coding. The recording shall be 480 seconds*. <i>If MPEG2 half D1 is not supported, the recording shall be made in the lowest MPEG2 video quality level.</i>	
<input type="radio"/>	4	Write protect the first recording (recording 1 of step 1) <i>In case the product does not allow individual protection of recordings, skip this step</i>	
<input type="radio"/>	5	Overwrite the first 60 seconds* of the second recording (recording 2 of step 1), starting at the exact starting point of the original second recording. Make the new recording in the lowest MPEG2 quality level.	
<input type="radio"/>	6	Delete recording 3 of step 1.	
<input type="radio"/>	7	Record over a length of 60 seconds* in the lowest MPEG2 half D1 quality level, in the free space created by step 6. The new recording shall start at the exact starting point of the original third recording. <i>If MPEG2 half D1 is not supported, the recording shall be made in the lowest MPEG2 video quality level.</i>	
<input type="radio"/>	8	Add 4 recordings (after the last recording) with different audio coding, preferably AC3, LPCM, MPEG and digital audio from an IEC-60958/61937 source. The recordings shall be 120 seconds* each and shall be in the highest video quality level supported in combination with each audio coding mode. <i>If some of the above mentioned audio codings are not supported, replace by other audio codings. If no other codings are available, replace by default audio coding.</i>	

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Annex C: Test Procedure Form

<input type="radio"/>	9	Add a recording of 120 seconds* in highest quality Video with 2 audio streams. <i>If recording with 2 audio streams is not supported, use just one audio stream.</i>	
<input type="radio"/>	10	Add one recording in MPEG2 half D1 and default audio coding. The recording shall be 480 seconds*. <i>If MPEG2 half D1 is not supported, the recording shall be made in the lowest MPEG2 video quality level.</i>	
<input type="radio"/>	11	Split the recording made in step 10 into 2 recordings of 240 seconds* each.	
<input type="radio"/>	12	Delete the last recording <i>If the split of step 11 was done, the second half of the recording created in step 10 shall be deleted. If step 11 was skipped (for the reason that the product does not support splitting), the entire recording created by step 10 shall be deleted.</i>	
<input type="radio"/>	13	Add a recording after the last (non-deleted) recording. The length of the new recording shall be 120 seconds*, and shall be in the same video quality level as the recording of step 10.	
<input type="radio"/>	14	Add 10 files to the data section (e.g. JPEG files). <i>If not supported, skip this step. This step is for products that conform to DVD+RW Video format specification version 2.</i>	
<input type="radio"/>	15	Make disc DVD-Video compatible (de-icing). <i>If step 14 was skipped, skip this step also.</i>	
Result Verifier			<input type="radio"/> Pass <input type="radio"/> Fail
Result Playback test			<input type="radio"/> Pass <input type="radio"/> Fail

* Tolerance on recording playback time shall be +/-15 seconds

Disc 2: VR-editing

TV system		<input type="radio"/> PAL <input type="radio"/> NTSC (Choose non-default TV system: for example, if disc 1 is recorded in PAL, disc 2 shall be recorded in NTSC. If only one TV system is supported, the default is used)	
Disc type		DVD+RW	
Purpose		Test of the editing functions of the VRMI: renaming the disc and recordings, changing keyframe pointers, creating and deleting chapter markers, creating play lists and disc playback sequence tables.	
Check	Step	Item	Supported by product (Y/N)
<input type="radio"/>	1	Make 3 recordings in the highest quality level and default audio coding. Each recording shall be 120 seconds*.	
<input type="radio"/>	2	Change the name of the disc to "VRMI TEST DISC 2"	
<input type="radio"/>	3	Change the keyframe for the disc. The new keyframe shall point to 60 seconds* from the start of the first recording	
<input type="radio"/>	4	Change the recording name of the first recording to "DISC 2 REC 1".	
<input type="radio"/>	5	Change the keyframe for the second recording. The new keyframe shall point to 60 seconds* from the start of the recording.	
<input type="radio"/>	6	Add a chapter marker at 60 seconds* from the start of the third recording.	
<input type="radio"/>	7	Add 3 more recordings in the highest video quality level of 300 seconds* each. All 3 recordings shall have a chapter marker every 60 sec* (5 chapter markers per recording). <i>If the product only supports automatic chapter markers, each recording shall be made sufficiently long such that it contains 5 chapter markers including the chapter marker at the start of the recording.</i> <i>If the product does not support chapter markers, the recordings can be made without chapter markers.</i>	
<input type="radio"/>	8	Delete chapter markers 2 and 3 in the 4 th recording	
<input type="radio"/>	9	Create a (Chapter) Play List for the 5 th recording, leaving out the second chapter (play list: chapters 1-3-4-5)	
<input type="radio"/>	10	Create a (Chapter) Play List for the 6 th recording in the following order: chapters 1-2-4-4-3 (4 occurs twice)	
<input type="radio"/>	11	Add a disc playback sequence table, with the recordings in the following order: 1-3-5-6	
Result Verifier		<input type="radio"/> Pass <input type="radio"/> Fail	
Result Playback test		<input type="radio"/> Pass <input type="radio"/> Fail	

* Tolerances shall be +/-15 seconds

Disc 3: Recording, VR-editing and finalizing a DVD+R			
<input type="radio"/> PAL <input type="radio"/> NTSC (Choose default TV system)			
Disc type		DVD+R	
Check	Step	Item	Supported by product (Y/N)
<input type="radio"/>	1	Make 3 recordings in the highest quality level and default audio coding. Each recording shall be 120 seconds*.	
<input type="radio"/>	2	<p>Add 3 more recordings in the highest video quality level of 300 seconds* each. All 3 recordings shall have a chapter marker every 60 sec* (5 chapter markers per recording).</p> <p><i>If the product only supports automatic chapter markers, each recording shall be made sufficiently long such that it contains 5 chapter markers including the chapter mark at the start of the recording.</i></p> <p><i>If the product does not support chapter markers, the recordings can be made without chapter markers.</i></p>	
<input type="radio"/>	3	Change the name of the disc to "VRMI TEST DISC 3".	
<input type="radio"/>	4	Change the keyframe for the disc. The new keyframe shall point to 60 seconds* from the start of the first recording	
<input type="radio"/>	5	Change the recording name of recording 1 of step 1 to "DISC 3 REC 1"	
<input type="radio"/>	6	Change the keyframe for recording 2 of step 1. The new keyframe shall point to 60 seconds* from the start of the recording.	
<input type="radio"/>	7	Add a chapter marker at 60 seconds* from the start of recording 3 of step 1	
<input type="radio"/>	8	Delete chapter markers 2 and 3 in the 4 th recording	
<input type="radio"/>	9	Create a (Chapter) Play List for the 5 th recording, leaving out the second chapter (play list: chapters 1-3-4-5)	
<input type="radio"/>	10	Delete the last recording	
<input type="radio"/>	11	Finalize the disc	
Result Verifier			<input type="radio"/> Pass <input type="radio"/> Fail
Result Playback test			<input type="radio"/> Pass <input type="radio"/> Fail

* Tolerances shall be +/-15 seconds

Disc 4: Recording and VR-editing (unfinalized DVD+R)			
TV system		<input type="radio"/> PAL <input type="radio"/> NTSC (Choose default TV system)	
Disc type		DVD+R	
Purpose		Test of recording, deleting and VRMI-editing functions on a DVD+R disc: renaming the disc and recordings, changing keyframe pointers, creating and deleting chapter markers, creating play lists. The disc is not finalized.	
Check	Step	Item	Supported by product (Y/N)
<input type="radio"/>	1	Make 3 recordings in the highest quality level and default audio coding. Each recording shall be 120 seconds*.	
<input type="radio"/>	2	Add 3 more recordings in the highest video quality level of 300 seconds* each. All 3 recordings shall have a chapter marker every 60 sec* (5 chapter markers per recording). <i>If the product only supports automatic chapter markers, each recording shall be made sufficiently long such that it contains 5 chapter markers including the chapter mark at the start of the recording.</i> <i>If the product does not support chapter markers, the recordings can be made without chapter markers.</i>	
<input type="radio"/>	3	Change the name of the disc to "VRMI TEST DISC 4".	
<input type="radio"/>	4	Change the keyframe for the disc. The new keyframe shall point to 60 seconds* from the start of the first recording.	
<input type="radio"/>	5	Change the recording name of recording 1 of step 1 to "DISC 4 REC 1".	
<input type="radio"/>	6	Change the keyframe for recording 2 of step 1. The new keyframe shall point to 60 seconds* from the start of the recording.	
<input type="radio"/>	7	Add a chapter marker at 60 seconds* from the start of recording 3 of step 1.	
<input type="radio"/>	8	Delete chapter markers 2 and 3 in the 4 th recording	
<input type="radio"/>	9	Create a (Chapter) Play List for the 5 th recording, leaving out the second chapter (play list: chapters 1-3-4-5)	
<input type="radio"/>	10	Delete the last recording	
<input type="radio"/>	11	DO NOT finalize the disc	
Result Verifier			<input type="radio"/> Pass <input type="radio"/> Fail
Result Playback test			<input type="radio"/> Pass <input type="radio"/> Fail

* Tolerances shall be +/-15 seconds

Disc 5: Recording on a foreign disc			
TV system	<input type="radio"/> PAL <input type="radio"/> NTSC		(Choose default TV system)
Disc type	DVD+RW		
Purpose	Test of correct handling of a disc created by another DVD+RW recorder.		
Disc preparation	<ul style="list-style-type: none"> The <i>DVD+RW Video Format Compliance Test Assets Disc</i> contains ISO disc images according to version 1 and version 2 of the DVD+RW Video format specifications (In the VRMI, VERN is set to 0010h or 0020h). Both versions are available in PAL and NTSC. If the product is able to record on version 2, select one of the version 2 images (PAL or NTSC). Otherwise select a version 1 image. Burn the ISO-image to a DVD+RW disc using a PC disc-burning application; refer to the instructions provided with the disc. 		
Check	Step	Item	Supported by product (Y/N)
<input type="radio"/>	1	Add a recording in the highest video quality level and default audio coding. The recording shall be 120 seconds*.	
Result Verifier			<input type="radio"/> Pass <input type="radio"/> Fail
Result Playback test			<input type="radio"/> Pass <input type="radio"/> Fail

* Tolerance on recording playback time shall be +/-15 seconds

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Annex D: History of changes

The changes from version 1.0 of the DVD+RW Video Format Compliance Test Specification to version 1.1 are following:

Location	Change
Section 1.3	References to video specifications now include v2.1 specifications
Section 1.3	References to physical specifications are made actual
Section 2.2	Reference to Video specifications v2.1
Annex A.3	[The assets disc] "...contains PAL and NTSC ISO-images, both in video format version 1 and version 2 (In the VRMI, VERN is set to 0010h or 0020h)."
Annex C disc 1	Steps 14 and 15 are added to cover features of DVD+RW Video specification v2.1
Annex C disc 5	Disc preparation: clarification added how to use the disc images on the assets disc.

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